

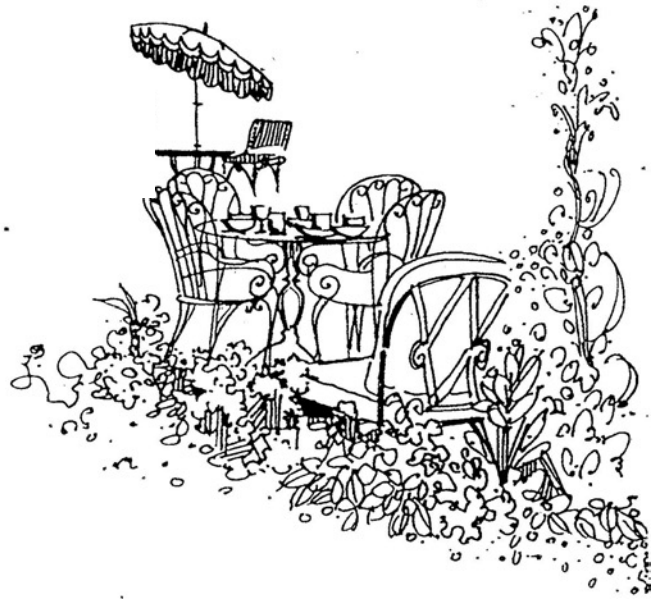
Chez Pierre

Presents ...

Friday, November 10, 2023

12:00pm noon- 1:00 pm

Duboc Room 4-331



Special Chez Pierre Seminar

Kin Fai Mak, Cornell University

“Thermodynamics and transport in a dipolar excitonic insulator.”

Excitonic insulators (EIs) emerge in semiconductors when the electron-hole binding energy exceeds the band gap. Whereas the charged excitations are frozen and unable to transport current, the neutral electron-hole pairs (excitons) are free to move in EIs. Dipolar EIs based on Coulomb-coupled atomic double layers allow us to explore exciton transport across the insulator because separate electrical contacts can be made to the electron and hole layers. In this talk, I will discuss the thermodynamic and transport properties in a dipolar EI realized in Coulomb-coupled WSe₂/MoSe₂ hetero-bilayers. I will also discuss the physics of a doped EI and evidence of a trion pseudogap metal.